

A NEW SPECIES OF STEATONYSSUS WITH KEY TO KNOWN SPECIES OF THE GENUS FROM CHINA (MESOSTIGMATA, MACRONYSSIDAE)

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Abstract In present paper, a new species of the genus *Steatonyssus* Kolenati, 1858, *S. diaoluensis* sp. nov., is described and illustrated. The types of the new species were found on the bat *Scotophilus temmincki* (Horsfield, 1824) in Hainan, China. A key to the known species of this genus from China is given.

Key words Mesostigmata, Macronyssidae, *Steatonyssus*, new species, bat.

The *Steatonyssus* Kolenati, 1858 is a group composed of widely distributed mites recorded primarily from bats. Till and Evans (1964) divided the genus into 2 subgenera: *Steatonyssus*, with 24 valid species (one with two subspecies), and *Steatonyssella*, a monotypic subgenus (for *S. fumani*). Radovsky (1967) recognized 29 species of the subgenus *Steatonyssus*. So far, there are about 49 species named in the subgenus *Steatonyssus* worldwide. Twelve species of *Steatonyssus* are known from China.

The specimens were collected and deposited in 70 % ethanol. The specimens examined were mounted in Hoyer's medium, and a number of them were selected for the type series. Drawing was made with a phase contrast microscope with drawing tube (Leica, Germany). The nomenclature for idiosomal chaetotaxy follows Lindquist and Evans (1965). All measurements are in micrometers (μm).

The following abbreviations and terms, following Tian, Jin and Zhang et al., 2009 are used in text: c. s.: gnathosomal setae; gen.: epigynial setae; hyp. 1-3: hypostomals setae; j1-6, J1-5: dorsocentral series setae; p. 1-2: sternal fissures; pan.: adanal setae; pon.: postanal setae; px1-3: intermedial series setae; r1-6, R1-7: marginal series setae; s1-6, S1-5: lateral series setae; st. 1-4: sternal setae; z1-6, Z1-5: mediolateral series setae.

Steatonyssus diaoluensis sp. nov. (Figs. 1-9)

Diagnosis. Female podosomal plate with 12 pairs of setae; j3 not reduced, about seventy percent of j4 in length. Opisthosomal plate narrow, bearing 10 pairs of primary setae, J5 as microsetae. j4, j5, z5, j6, J1, J2, px, J3, J4 moderate length and subequal. Sternal plate with posterior band strongly sclerotized. Peritreme terminating over one-half of coxa. Caudal setae

moderate length, stout, intermediate between needle-like and abruptly pointed. Legs long and slender, tarsus about 90 μm long.

Male dorsal plate with 7 pairs of setae, 6 pairs of pores. Ventral armature divided into sterno-genito-ventral plate and anal plate, bearing st. 1-st. 3, gen. (1 on unarmed integument, 1 on margin of plate) and 4 other setae, st. 4 on unarmed integument.

Female (Figs. 1-5). Idiosoma broadly ovoid in prosomal portion, with enlarged opisthosoma.

Dorsum (Fig. 1). Podosomal plate with distinctly sculpturing, anterior obtuse and posterior slightly protrusion; with 12 pairs of setae; j3 not reduced, about seventy percent length of j4. Opisthosomal plate narrow, bearing 10 pairs of primary setae. J5 as microsetae; Z3, Z4, S5, Z5 small; j4, j5, z5, j6, J1, J2, px, J3, J4 moderate length and subequal. Unarmed dorsum with approximately 53 pairs of setae.

Venter (Fig. 2). Tritosternum bipartite with laciniae slender but with villus. Sternal plate with distinctly sculpturing; anterior margin indistinct; embowed forwards reaching at level of st. 2-st. 3; with strongly sclerotized band on posterior margin; st. 1 pointing backward and exceeding posterior margin of plate; sternal glands inconspicuous; with 2 pairs of fissures (p. 1 and p. 2); st. 3, st. 4 subequal. Epigynial plate narrow with bluntly pointed tip; median protrusion of anterior margin membranous and moderately broad; sculpturing very weak. Anal plate with anterior margin weakly curved or almost flat; anal pore anterior to 1-third of plate; with 1 pair of adanal setae and 1 single postanal seta; pan. at posterior level of anal pore, more or less smaller than pon. Metapodal plate very weak and inconspicuous. Peritreme (Fig. 3) terminating over one-half of coxa, plate extending anteriorly as narrow strip which widens and then narrows

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to termination over coxa . Opisthosoma ventrally with about 58 pairs of setae , caudal setae moderate length , stout , intermediate between needle-like and abruptly pointed.

Legs. Legs moderate long and slender compared

with most species in genus , setation as in Table 1. Claws of leg slightly smaller than others. Coxa (Fig. 4) with small spur. Coxal ridges distinct on - and strongly developed on coxae and . Tibia length-width ratio about 1.47 1.00.

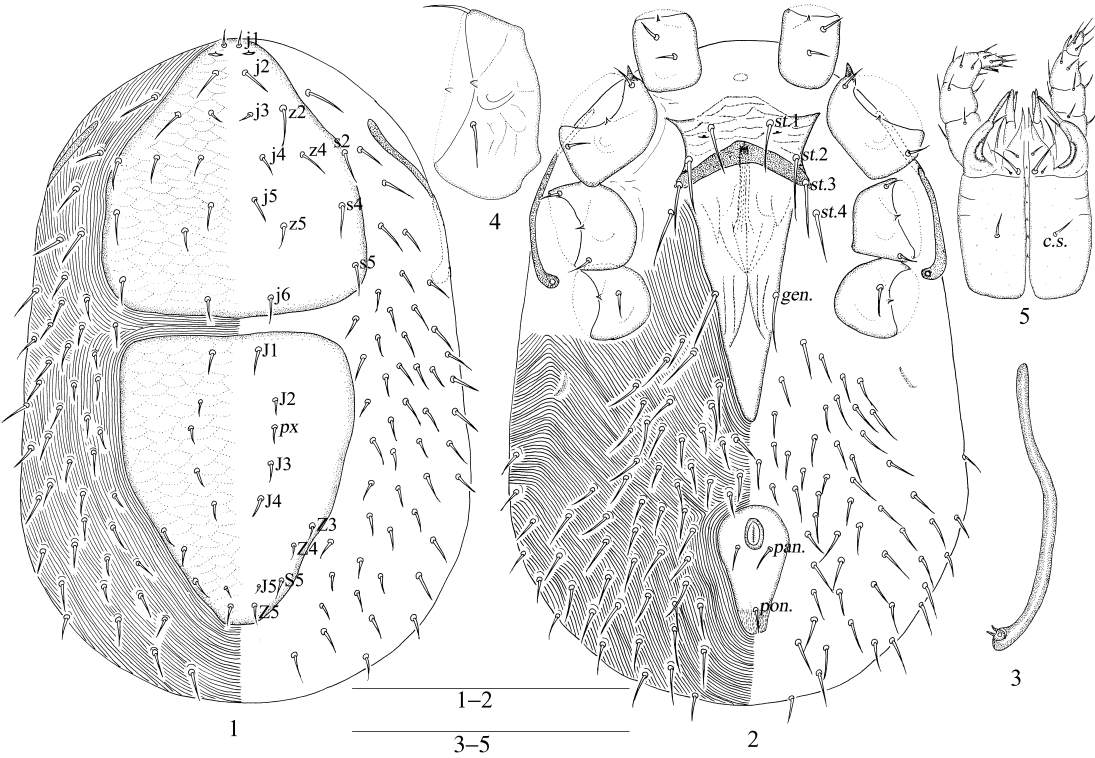
Table 1. Leg chaetotaxy of female of *Steatonyssus diaoluensis* sp. nov.

Leg	Coxa	Trochanter	Femur	Genu	Tibia	Tarsus
2		1-1/3-1 (6)	2-5/4-2 (13)	2-6/3-2 (13)	2-6/3-2 (13)	4-18/7-4 (33)
2		1-0/3-1 (5)	2-4/3-1 (10)	2-5/2-2 (11)	2-4/2-2 (10)	3-5/5-3 (16)
2		1-0/3-1 (5)	1-4/1-0 (6)	2-4/2-2 (10)	2-3/2-2 (9)	3-5/5-3 (16)
1		1-0/3-1 (5)	1-3/1-1 (6)	2-5/2-1 (10)	2-4/2-2 (10)	3-5/5-3 (16)

Gnathosoma (Fig. 5). Deutosternal groove with teeth arranged in single file. Gnathosomal base subrectangular in outline , with 3 pairs of hypostomals setae and 1 pair of gnathosomal setae; hyp. 1 short and hyp. 3 slender. Trochanter-tarsus chaetotaxy formula 2-5-6-11-12 + thin and stalked apotelus.

Measurements. Holotype. Idiosomal length 563.5 , width 392.0; podosomal plate length 254.8 , width 225.4; opisthosomal plate length 254.8 , width 210.7; space 14.7 between podosomal plate and opisthosomal plate; z5 space 83.3 ; z4 space 122.5 ; tritosternum length 88.2 ; sternal plate length 56.4 , width 117.6; epigynial plate length 235.2 , width 58.8 at level of gen. ; anal

plate length 112.7 , width 61.3 ; peritreme length 166.6 ; gnathosomal base length 66.2 , width 73.5 ; fixed digit length 41.7 ; movable digit length 36.8 ; pedipalps length 112.7 ; tarsul length : , 90.7 ; , 73.5 ; , 73.5 ; , 107.8. Setal lengths : j1 , 17.2 ; j2 , 29.4 ; j3 , 12.3 ; j4 , 17.2 ; j5 , 19.6 ; j6 , 19.6 ; J1 , 19.6 ; J2 , 17.2 ; J3 , 17.2 ; J4 , 19.6 ; J5 , 9.8 ; z2 , 29.4 ; z4 , 27.0 ; z5 , 19.6 ; Z3 , 14.7 ; Z4 , 14.7 ; Z5 , 14.7 ; s2 , 31.9 ; s4 , 29.4 ; s5 , 24.5 ; S5 , 14.7 ; px , 17.2 ; st. 1 , 44.1 ; st. 2 , 49 ; st. 3 , 51.5 ; st. 4 , 51.5 ; gen. , 49 ; pan. , 24.5 ; pon. , 29.4 ; longest caudal setae 29.4 ; c. s. , 19.6 ; hyp. 1 , 4.9 ; hyp. 2 , 12.3 ; hyp. 3 , 36.8.



Figs. 1-5. *Steatonyssus diaoluensis* Tian et Jin , sp. nov. , female. 1. Dorsum. 2. Venter. 3. Peritreme. 4. Coxa . 5. Gnathosoma. Scale bars : 1-2 = 250 μm , 3-5 = 125 μm.

Male (Figs. 6-9). Idiosoma broadly ovoid.

Dorsum (Fig. 6). Dorsal plate entire ; oblong-oval , tapering rather slightly near posterior , with reticulate sculpturing over entire plate ; 17 pairs of setae and 6 pores

present , j3 , J3 absent , 1 s2 seta on the plate , one on unarmed integument , with pair of lyriform fissures at back of j1. Unarmed dorsum with approximately 23 pairs of setae.

Venter (Fig. 7). Tritosternum bipartite with laciniae slender but with villus. Ventral armature divided into sterno-genito-ventral plate and anal plate. Sterno-genito-ventral plate bearing st. 1-st. 3, gen. (1 on unarmed integument, 1 on margin of plate) and 4 other setae, st. 4 on unarmed integument; with 2 pairs of fissures, crenellation; with reticulate sculpturing over

entire plate. Anal plate conversely pyriform, with rounded anterior margin, relatively wide cribrum; with 1 pair of adanal setae and 1 single postanal seta. Metapodal plate small oval, very weak and inconspicuous. Peritreme (Fig. 8) terminating over posterior of coxa.

Legs. Legs as female, setation as in Table 2.

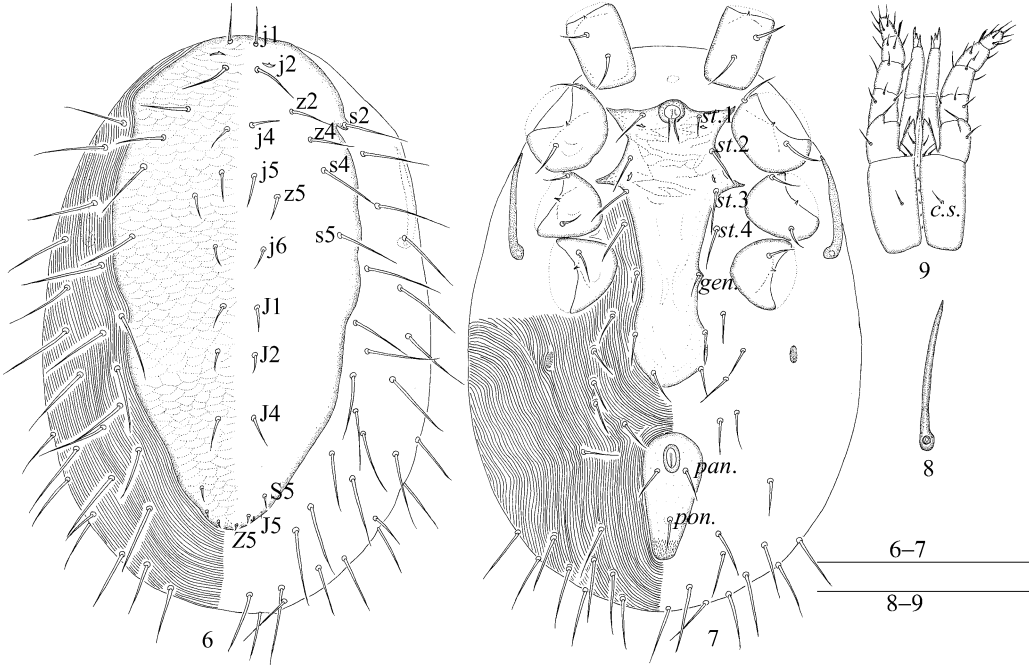
Table 2. Leg chaetotaxy of male of *Steatonyssus diaoluensis* sp. nov.

Leg	Coxa	Trochanter	Femur	Genu	Tibia	Tarsus
	2	1-1/3-1 (6)	2-5/4-2 (13)	2-6/3-2 (13)	2-6/3-2 (13)	4-20/7-4 (35)
	2	1-0/3-1 (5)	2-4/3-1 (10)	2-5/2-2 (11)	2-4/2-2 (10)	3-5/5-3 (16)
	2	1-0/3-1 (5)	2-3/0-1 (6)	2-4/2-2 (10)	2-3/2-2 (9)	3-5/5-3 (16)
	1	1-0/3-1 (5)	1-3/1-1 (6)	2-5/2-1 (10)	2-4/2-2 (10)	3-5/5-3 (16)

Gnathosoma (Fig. 9). Deutosternal groove with teeth arranged in single file. Gnathosomal base subrectangular in outline, with 3 pairs of hypostomals setae and 1 pair of gnathosomal setae; hyp. 1, c. s. short, hyp. 3 long and slender. spermatodactyl slender, extending to middle of genu. Trochanter-tarsus chaetotaxy formula 2-5-6-11-12 + thin and stalked apotelus.

Measurements. Paratype. Idiosomal length 661.5, width 460.6; dorsal plate length 568.4, width 294; space 14.7 between podosomal plate and opisthosomal plate; z5 space 93.1; z4 space 149.5; sterno-genito-

ventral plate length 343, width 127.4 anterior of plate, width 63.7 at level of gen.; anal plate length 137.2, width 78.4; peritreme length 98; gnathosomal base length 110.3, width 88.2; fixed digit length 34.3; spermadactyl length 49; pedipalps length 151.9; tarsul length: , 196; , 127.4; , 132.3; , 196. Setal lengths: j1, 44.1; j2, 53.9; j4, 49; j5, 39.2; j6, 44.1; J1, 39.2; J2, 31.9; J3, 36.8; J5, 12.3; z2, 57.2; z4, 65; z5, 44.1; Z5, 7.4; s2, 80.6; s4, 83.2; S5, 14.7; st. 1, 44.1; st. 2, 49; st. 3, 53.9; st. 4, 51.5; gen., 39.2; pan., 39.2; pon., 34.3; c. s., 19.6; hyp. 1, 12.3; hyp. 2, 14.7; hyp. 3, 34.3.



Figs. 6-9. *Steatonyssus diaoluensis* sp. nov., male. 6. Dorsum. 7. Venter. 8. Peritreme. 9. Gnathosoma. Scale bars: 6-7 = 250 μm, 8-9 = 125 μm

Holotype female, 06 Sep. 2005, from Diaoluo Mountain (18°30' N, 110°1' E), Hainan, ZHANG Shu-Yi. Paratype: 1 male, same date as holotype. The hosts of all specimens are *Scotophilus temmincki* (Horsfield, 1824). The specimens are deposited in the Institute of Entomology, Guizhou University (GUGC), China.

Etymology. The species name refers to Diaoluo Mountain from where the type specimens were collected.

Remarks. The new species is close to *S. abramus* Wang, 1963 with inconspicuous sternal glands. The differences between them are: in the new species, female podosomal plate with 12 pairs of setae, opisthosomal

plate bearing 10 pairs of primary setae; male dorsal plate with 17 pairs of setae, ventral armature divided into sternogenito-ventral plate and anal plate, the foreplate bearing st. 1-st. 3, gen. and 4 other setae. In *S. abramus*, female podosomal plate with (11 or 12) pairs of setae, opisthosomal plate bearing (11 or 9) pairs of primary setae; male dorsal plate with 22 or 23 pairs of setae, ventral armature entire, with 18 to 20 setae (except pan. and pon.).

Key to known species of *Steatonyssus* from China (females)

1. Podosomal plate with 10 pairs of setae, j3 absent *S. megaporus*
Podosomal plate with 11 or 12 pairs of setae, j3 present 2
2. Podosomal plate with 12 pairs of setae; opisthosomal plate bearing 10 pairs of primary setae *S. diaoluensis* sp. nov.
Podosomal plate with 11 pairs of setae 3
3. Opisthosomal plate with 9 or 11 pairs of setae *S. abramus*
Opisthosomal plate with 6 or 7 pairs of setae 4
4. Sternal plate without strongly sclerotized band on posterior margin
..... *S. dalianensis*
Sternal plate with strongly sclerotized band on posterior margin 5
5. Dorsal plate setae and unarmed dorsum setae very long, each setae of podosomal plate distinctly exceeding basal of adjacent setae
..... *S. longispinosus*
Dorsal plate setae and unarmed dorsum setae moderate length, 1 or more setae of podosomal plate not exceeding basal of adjacent setae 6
6. Opisthosomal plate very long, length more than 400 μm ; peritreme terminating over anterior of coxa *S. gaisleri*
Opisthosomal plate moderate length, less than 400 μm ; peritreme terminating over anterior of coxa or 7
7. Opisthosomal plate with 6 pairs of setae 8
Opisthosomal plate with 7 pairs of setae 9
8. j3 present, Z5 absent *S. sinicus*
j3 absent, Z5 present *S. michaelianus*
9. j6 distinctly exceeding posterior margin of podosomal plate 10
j6 short, slightly exceeding posterior margin of podosomal plate 11
10. Z5 distinctly long *S. spinosus*
Z5 very short *S. nyctali*
11. Posterior of opisthosomal plate flat, length of podosomal plate and opisthosomal plate subequal *S. superans*
Posterior of opisthosomal plate narrow, length of podosomal plate obviously shorter than length of podosomal plate
..... *S. periblepharus*

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肪刺螨属一新种记述及中国已知种检索 (中气门目, 巨刺螨科)

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摘要 记述采自海南的小黄蝠 *Scotophilus temminckii* (Horsfield, 1824) 体表的寄生革螨 1 新种: 吊罗肪刺螨 *Steatonyssus diaoluensis* sp. nov.。文中给出了中国肪刺螨亚属 *Steatonyssus* 已知种检索表。研究标本保存于贵州大学昆虫研究所标本馆。

吊罗肪刺螨, 新种 *Steatonyssus diaoluensis* sp. nov. (图 1~9)

新种与伏翼肪刺螨 *Steatonyssus abramus* Wang, 1963 近似, 胸腺都不明显。二者的区别在于: 新种雌螨前背板具 12 对刚毛, 后背板具 10 对刚毛; 雄螨全背板具有 17 对刚毛, 腹关键词 中气门目, 巨刺螨科, 肪刺螨属, 新种, 蝙蝠。

中图分类号 Q959.226

板分为胸生殖腹板和肛板两部分, 前板具有胸毛、生殖毛和 4 根副刚毛。而伏翼肪刺螨雌螨前背板毛具 11 或 12 对刚毛, 后背板具 11 或 9 对刚毛, 雄螨腹板为全腹板, 除肛侧毛和肛后毛外, 板上还有 18~20 根刚毛。

正模 , 海南吊罗山, 2005-09-06, 张树义采。副模:

1 , 海南吊罗山, 2005-09-06, 张树义采。

词源: 新种名出自标本采集地吊罗山。

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